ANALYTICAL REPORT

Prepared by
LOCKHEED MARTIN, Inc.

Ironbound Athletic Field Artificial Turf Investigation
Newark New Jersey

November 2007

EPA Work Assignment No. 0-292
LOCKHEED MARTIN Work Order EAC00292
EPA Contract No. EP-C-04-032

Submitted to
R. Singhvi
EPA-ERT

Vinod Kansal 11/26/07
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11/26/07
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Appendices will be furnished on request

Introduction

REAC, in response to WA#-292, provided analytical support for environmental samples collected from the Ironbound Athletic Field Artificial Turf Investigation in Newark, NJ as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples were treated with procedures consistent with those specified in REAC SOP #1008.

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis/ Method	Laboratory	Data Package
292-11/02/07-0002	19	11/01/07	11/05/07	Soil	PCB/REAC SOP 1801	REAC	S 331
	19				Lead/REAC SOP 1811		S 319
292-11/06/07-0004	5	11/01/07	11/06/07	Dust			S 322
292-11/02/07-0003	2			Residue			S 336
	10			Mat			
	5			Turf			S 341
40591	2		11/14/07	Soil	PCB/REAC SOP 1801	REAC	S 343

† REAC is NELAP certified for PCB and lead analyses.

Case Narrative

The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. All data validation flags have been inserted into the results tables. At the request of the WAM, samples were analyzed for lead only.

PCBs in Soil Package S 331

The data package was examined and found to be acceptable.

Lead in Soil Package S 319

Lead was below the % recovery (%R) criterion for the MS of sample 42666. Lead is qualified estimated low (J-) for samples 42665 thru 42668 and 42685 thru 42688.

Lead in Dust Package S 322

The data package was examined and found to be acceptable.

Lead in Mat and Residue Package S 336

Lead was above the % R criterion for the MS/MSD of sample 42684. Lead is qualified estimated high

(J+) for samples 42680 and 42684.

Lead in Turf Package S 341

At the request of the Work Assignment Manager, the turf samples were washed with distilled water four times to remove any dirt or debris, air dried for 24 hours and dried in an oven at 50 degrees C for 10 hours prior to sample digestion. The samples identified as "Turf" were prepared using the entire sample including the turf fibers and the backing. The samples identified as "Fiber" were prepared using only fibers from each sample.

The data package was examined and found to be acceptable.

PCB in Soil Package S 343

Sample 1923 is a composite of samples 42680 and 42684 from chain of custody record #2920110207-0003.

Samples 1923 and 42660 exceeded the 14 day holding time criterion for PCB extraction. The WAM requested analysis for PCBs from these samples despite the holding time. The results in these samples are qualified estimated (J).

Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	denotes Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion volume
ppm	parts per million
pptv	parts per trillion volume
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
REAC	Response Engineering and Analytical Contract
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxic Characteristics Leaching Procedure
VOC	Volatile Organic Compounds
*	Value exceeds the acceptable QC limits.

m^3	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	ml	milliliter
ng	nanogram	pg	picogram				

Data Validation Flags

J	Value or Reporting limit is estimated
J+	Value is estimated high (Metals only)
J-	Value is estimated low (Metals only)
R	Value is unusable
U	Not detected
UJ	Not detected and reporting limit estimated

Rev. 11/20/06

Table 1.1 Results of the Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Dry Weight

Method REAC SOP 1801

Sample Number	SBLK110507		42669		42665		42673		42672	
Location	-		2TB		6P		2PM		1PM	
Percent Solids	100		95		96		91		92	
Analyte	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg
Aroclor 1016	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3
Aroclor 1221	U	83.3	U	87.7	U	86.8	U	91.6	U	90.6
Aroclor 1232	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3
Aroclor 1242	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3
Aroclor 1248	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3
Aroclor 1254	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3
Aroclor 1260	U	41.7	U	43.9	40.6 J	43.4	U	45.8	U	45.3
Aroclor 1268	U	41.7	U	43.9	U	43.4	U	45.8	U	45.3

Table 1.1 (cont) Results of the Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Dry Weight

Method REAC SOP 1801

Sample Number	42671		42670		42674		42668		42667	
Location	1TB		2TBD		1HP		2D		1D	
Percent Solids	94		94		90		97		98	
Analyte	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg
Aroclor 1016	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1221	U	88.7	U	88.7	U	92.6	U	85.9	U	85.0
Aroclor 1232	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1242	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1248	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1254	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1260	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5
Aroclor 1268	U	44.3	U	44.3	U	46.3	U	43.0	U	42.5

Table 1.1 (cont) Results of the Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Dry Weight

Method REAC SOP 1801

Sample Number	42666		42678		42688		42687		42686	
Location	7P		1SB		5P		4P		4D	
Percent Solids	94		89		95		95		96	
Analyte	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg
Aroclor 1016	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1221	U	88.7	U	93.6	U	87.7	U	87.7	U	86.8
Aroclor 1232	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1242	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1248	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1254	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1260	26.6 J	44.3	U	46.8	U	43.9	U	43.9	U	43.4
Aroclor 1268	U	44.3	U	46.8	U	43.9	U	43.9	U	43.4

Table 1.1 (cont) Results of the Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Dry Weight

Method REAC SOP 1801

Sample Number	42685		42679		42677		42676		42675	
Location	3D		2SB		2FB		1FB		2HP	
Percent Solids	98		87		94		94		90	
Analyte	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg
Aroclor 1016	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1221	U	85.0	U	95.8	U	88.7	U	88.7	U	92.6
Aroclor 1232	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1242	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1248	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1254	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1260	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3
Aroclor 1268	U	42.5	U	47.9	U	44.3	U	44.3	U	46.3

Table 1.1 (cont) Results of the Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation

Method REAC SOP 1801

Sample Number	SBLK111607		42660		1923*	
Location	-		21-T		-	
Percent Solids	100		100		100	
Analyte	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg	Result. µg/kg	RL µg/kg
Aroclor 1016	U	41.7	23.1 J	41.7	26.4 J	41.7
Aroclor 1221	U	83.3	U J	83.3	U J	83.3
Aroclor 1232	U	41.7	U J	41.7	U J	41.7
Aroclor 1242	U	41.7	U J	41.7	U J	41.7
Aroclor 1248	U	41.7	U J	41.7	U J	41.7
Aroclor 1254	U	41.7	U J	41.7	U J	41.7
Aroclor 1260	U	41.7	22.4 J	41.7	59.0 J	41.7
Aroclor 1268	U	41.7	U J	41.7	U J	41.7

* Sample 1923 is a composite of samples 42680 and 42684.

Table 1.2 Results of the Analysis for Lead in Dust
WA # 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Are Based on Sample As Received

Method REAC SOP 1811

Analyte		Lead	
Sample No.	Location	Result mg/kg	RL mg/kg
Method Blank-11/06/07	Lab	U	1.00
42657	17-T	1410	1.25
42658	19-T	1130	1.11
42659	16-T	2290	1.00
42660	21-T	230	1.00
42661	7-T	1340	1.00

Table 1.3 Results of the Analysis for Lead in Soil
WA # 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Are Based on Dry Weight

Method REAC SOP 1811

Analyte			Lead	
Sample No.	Location	% Solids	Result mg/kg	RL mg/kg
Method Blank-11/05/07	Lab	NA	U	1.00
42669	2TB	95	4.18	0.966
42665	6P	96	22.3 J-	0.947
42673	2PM	91	5.38	0.999
42672	1PM	92	5.24	1.03
42671	1TB	94	8.22	0.976
42670	2TBD	94	4.10	0.967
42674	1HP	90	6.58	0.966
42668	2D	97	12.0 J-	0.982
42667	1D	98	14.0 J-	0.972
42666	7P	94	29.7 J-	0.994
42678	1SB	89	6.06	1.02
42688	5P	95	7.34 J-	0.957
42687	4P	95	9.80 J-	0.966
42686	4D	96	15.3 J-	0.974
42685	3D	98	8.87 J-	0.972
42679	2SB	87	10.5	1.03
42677	2FB	94	6.13	0.976
42676	1FB	94	13.0	0.967
42675	2HP	90	6.68	0.975

Table 1.4 Results of the Analysis for Lead in Mat and Residue
WA # 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Method REAC SOP 1811

Analyte			Lead	
Sample No.	Location	Matrix Type	Result mg/kg	RL mg/kg
Method Blank 111207	Lab	NA	U	1.00
42699	7TB	Mat 1	3.55	3.45
42693	16TB	Mat 1	16.3	3.33
42693dup	16TB	Mat 1	14.8	3.33
42690	17TC	Mat 1	7.06	3.57
42682	19TB	Mat 1	5.97	3.03
42696	21TB	Mat 1	14.2	3.13
42700	7TC	Mat 2	25.1	3.33
42694	16TC	Mat 2	5.09	3.45
42691	17TD	Mat 2	U	3.13
42681	19TC	Mat 2	4.51	3.03
42697	21TC	Mat 2	4.76	3.23
42684	17TA	Residue	196 J+	2.00
42680	19TD	Residue	270 J+	1.64

Table 1.5 Results of the Analysis for Lead in Turf and Fibers
WA # 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Method REAC SOP 1811

Analyte		Turf-Whole piece Lead		Turf (Fibers only) Lead	
Sample No.	Location	Result mg/kg	RL mg/kg	Result mg/kg	RL mg/kg
Method Blank	Lab	U	1.00	U	1.00
42683	19TA	3940	4.00	4850	5.56
42689	17TB	3990	3.33	4580	3.85
42692	16TA	4020	4.35	4950	5.56
42695	21TA	3960	4.55	4900	5.88
42698	7TA	3730	3.45	4920	5.26

Table 2.1 Results of the MS/MSD Analysis for PCBs in Soil
WA#0-292 Ironbound Athletic Field Artificial Turf Investigation
Resuts Are Based on Dry Weight

Sample ID: 42672

Analyte	Sample Conc µg/kg	MS/MSD Spike Added µg/kg	MS Conc µg/kg	MS % Recovery	MSD Conc µg/kg	MSD % Recovery	RPD
Aroclor 1016	U	181	138	76	131	72	5
Aroclor 1260	U	181	204	113	208	115	2

Sample ID: 42666

Analyte	Sample Conc µg/kg	MS/MSD Spike Added µg/kg	MS Conc µg/kg	MS % Recovery	MSD Conc µg/kg	MSD % Recovery	RPD
Aroclor 1016	U	177	180	102	222	125	21
Aroclor 1260	26.6	177	256	129	228	114	12

Table 2.2 Results of the MS/MSD Analysis for Lead in Dust
WA#0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Are Based on Sample As Received

Sample No. 42660

Analyte	Sample Result mg/kg	MS/MSD Spike Added mg/kg	MS Result mg/kg	MS % Recovery	MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits % Recovery	RPD
Lead	230	40.0	285	NC	281	NC	NC	75-125	20

Table 2.3 Results of the MS/MSD Analysis for Lead in Soil
WA#0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Are Based on Dry Weight

Sample No. 42672

Analyte	Sample Result mg/kg	MS/MSD Spike Added mg/kg	MS Result mg/kg	MS % Recovery	MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits % Recovery	RPD
Lead	5.24	41.4	45.3	97	45.5	97	0	75-125	20

Sample No. 42666

Analyte	Sample Result mg/kg	MS/MSD Spike Added mg/kg	MS Result mg/kg	MS % Recovery		MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits %Rec	RPD
Lead	29.7	39.8	59.2	74	*	61.2	79	3	75-125	20

Table 2.4 Results of the MS/MSD Analysis for Lead in Mat
WA#0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Sample No. 42694

Analyte	Sample Result mg/kg	MS Spike Added mg/kg	MS Result mg/kg	MS % Recovery	MSD Spike Added mg/kg	MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits % Recovery	RPD
Lead	5.09	138	137	96	133	136	98	1	75-125	20

Table 2.5 Results of the MS/MSD Analysis for Lead in Residue
WA # 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Sample No. 42684

Analyte	Sample Result mg/kg	MS/MSD Spike Added mg/kg	MS Result mg/kg	MS % Recovery		MSD Result mg/kg	MSD % Recovery		RPD	Recommended QC Limits %Rec	Recommended QC Limits RPD
Lead	196	80.0	312	145	*	306	138	*	2	75-125	20

Table 2.6 Results of the MS/MSD Analysis for Lead in Turf
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Sample No. 42695 (Turf whole piece)

Analyte	Sample Result mg/kg	MS Spike Added mg/kg	MS Result mg/kg	MS % Recovery	MSD Spike Added mg/kg	MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits % Recovery	Recommended QC Limits RPD
Lead	3960	160	4020	NC	148	3780	NC	6	75–125	20

Table 2.7 Results of the MS/MSD Analysis for Lead in Turf Fibers
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Sample No. 42695(Fibers)

Analyte	Sample Result mg/kg	MS/MSD Spike Added mg/kg	MS Result mg/kg	MS % Recovery	MSD Result mg/kg	MSD % Recovery	RPD	Recommended QC Limits % Recovery	RPD
Lead	4900	200	5110	NC	5250	NC	3	75-125	20

Table 2.8 Results of the LCS Analysis for PCBs in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation

LCS standard: SLCS-PS60
Date Analyzed: 11/6/07

Analyte	LCS Spike Added µg/kg	LCS Conc µg/kg	LCS % Recovery	Advisory QC Limits % Recovery
Aroclor 1016	167	159	95	70-130
Aroclor 1260	167	188	113	70-130

LCS standard: LCS/LCSD111608
Date Analyzed: 11/17/07

Analyte	LCS Spike Added µg/kg	LCS Conc µg/kg	LCS % Recovery	LCSD Conc µg/kg	LCSD % Recovery	RPD	Advisory QC Limits RPD	Advisory QC Limits % Recovery
Aroclor 1016	167	129	77	137	82	6	20	70-130
Aroclor 1260	167	159	95	172	103	8	20	70-130

Table 2.9 Results of the LCS Analysis for Lead in Dust
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation

LCS Standard: ERA Lot No. D056-540-11/06/07
Date Analyzed: 11/6/2007

Analyte	Conc. Recovered mg/kg	Certified Value mg/kg	PALs mg/kg	% Recovery
Lead	69.3	72.2	59.1 - 85.4	96

PAL - Performance Acceptance Limits

Table 2.10 Results of the LCS Analysis for Lead in Soil
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation

LCS Standard: ERA Lot No. D056-540-11/05/07
Date Analyzed: 11/5/2007

Analyte	Conc. Recovered mg/kg	Certified Value mg/kg	PALs mg/kg	% Recovery
Lead	67.7	72.2	59.1 - 85.4	94

PAL - Performance Acceptance Limits

LCS Standard: ERA Lot No. D056-540-11/13/07
Date Analyzed: 11/13/2007

Analyte	Conc. Recovered mg/kg	Certified Value mg/kg	PALs mg/kg	% Recovery
Lead	64.1	72.2	59.1 - 85.4	89

PAL - Performance Acceptance Limits

Table 2.11 Results of the LCS/LCSD Analysis for Lead in Turf and Fibers
WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation

LCS Standard: ERA Lot No. D056-540-111407
Date Analyzed: 11/15/2007

Analyte	Certified Value mg/kg	LCS Conc mg/kg	LCS % Recovery	LCSD Conc mg/kg	LCSD % Recovery	RPD	QC Limit RPD	PALs mg/kg
Lead	72.2	69.1	96	67.6	94	2	20	59.1-85.4

Table 2.12 Results of the Duplicate Analysis for Lead in Turf and Fibers

WA# 0-292 Ironbound Athletic Field Artificial Turf Investigation
Results Based on Sample As Received

Sample 42689

Section	Initial Analysis mg/kg	Duplicate Analysis mg/kg	RPD	QC Limits RPD
Whole Turf piece	3990	3860	3	20
Fibers only	4580	4330	6	20

0292-DAR-11260707

EP-C-04-032

CHAIN OF CUSTODY RECORD

Site #: 292

Contact Name: D Killeen

Contact Phone: X4245

No: 292-11/02/07-0002

Lab #	Sample #	Location	Matrix	Collected	Numb Cont	Container	Preservative	Analyses	MS/MSD
15365	42669	2TB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15366	42665	6P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15367	42673	2PM	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15368	42672	1PM	Soil	11/1/2007	2	8 oz cwm	4 degrees C	PCBs	Y
↓	42672	1PM	Soil	11/1/2007	2	8 oz cwm	4 degrees C	Lead (Pb)	Y
15369	42671	1TB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42671	1TB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15370	42670	2TBD	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15371	42674	1HP	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15365	42669	2TB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15371	42674	1HP	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15372	42668	2D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42668	2D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15373	42667	1D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42667	1D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15374	42666	7P	Soil	11/1/2007	2	8 oz cwm	4 degrees C	PCBs	Y
↓	42666	7P	Soil	11/1/2007	2	8 oz cwm	4 degrees C	Lead (Pb)	Y
15366	42665	6P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15370	42670	2TBD	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N

Special Instructions: Pb prelims due in 2-3 days, PCB prelims in 5 days

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Samples received 4°C Jm 11/5/07

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
all / analysis	[signature]	11/5/07	[signature]	11/5/07	8:00	10/Analysis's Metals	[signature]	11/5/07	J. Patel	11/05/07	8:45 AM
IE / transfer to organic (other analysis)	J. Patel	11/05/07	[signature]	11/5/07	10:10	All/Analysis's PCB	[signature]	11/5/07	[signature]	11/05/07	11:30 AM

023

EP-C-04-032

0292-DAR-11260707

CHAIN OF CUSTODY RECORD

Site #: 292

Contact Name: D Killeen

Contact Phone: X4245

No: 292-11/02/07-0002

Lab #	Sample #	Location	Matrix	Collected	Numb Cont	Container	Preservative	Analyses	MS/MSD
15375	42678	1SB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15376	42688	5P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15377	42687	4P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42687	4P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15378	42686	4D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42686	4D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15379	42685	3D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42685	3D	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15367	42673	2PM	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15380	42679	2SB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15376	42688	5P	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15375	42678	1SB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
15381	42677	2FB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42677	2FB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15382	42676	1FB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42676	1FB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15383	42675	2HP	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N
↓	42675	2HP	Soil	11/1/2007	1	8 oz cwm	4 degrees C	Lead (Pb)	N
15380	42679	2SB	Soil	11/1/2007	1	8 oz cwm	4 degrees C	PCBs	N

024

Special Instructions: Pb prelims due in 2-3 days, PCB prelims in 5 days

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Received 4°C JM 11/5/07

Items/Reason	Relinquished by	Date	Received by	Date	Time
all Analysis	[signature]	11/5/07	[signature]	11/5/07	8:00
All / Other Analysis	[signature]	11/5/07	[signature]	11/5/07	10:10

Items/Reason	Relinquished By	Date	Received by	Date	Time
All / Metals Analysis	[signature]	11/5/07	[signature]	11/05/07	8:45 AM
All / PCB Analysis	[signature]	11/5/07	[signature]	11/5/07	11:30 AM

0292-DAR-11260707

EP-C-04-032 ✓

CHAIN OF CUSTODY RECORD

Site #: 292

Cintact Name: Deborah Killeen

Contact Phone: 732-321-4245

No: 292-11/02/07-0003

Lab: REAC

Lab Phone: 732-321-4252

Lab #	Sample #	Location	Matrix	Collected	Numb Cont	Container	Preservative	Analyses	MS/MSD
15419	42680	19TD	Residue	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N
15420	42681	19TC	Mat 2	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15421	42682	19TB	Mat 1	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15422	42683	19TA	Turf	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15423	42684	17TA	Residue	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N
15424	42689	17TB	Turf	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15425	42690	17TC	Mat 1	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15426	42691	17TD	Mat 2	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15427	42692	16TA	Turf	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15428	42693	16TB	Mat 1	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15429	42694	16TC	Mat 2 ~~Residue~~ dak 11/6/07	11/1/2007	1	dk 11/6/07 ~~8 oz cwm~~ Ziploc Bag	None	Lead (Pb)	N
15430	42695	21TA	Turf	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15431	42696	21TB	Mat 1	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15432	42697	21TC	Mat 2	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15433	42698	7TA	Turf	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15434	42699	7TB	Mat 1	11/1/2007	1	Ziploc Bag	None	Lead (Pb)	N
15435	42700	7TC	Mat 2	11/1/2007	1	Ziploc bag	None	Lead (Pb)	N

dak 11/6/07

025

Special Instructions: Prep samples as discussed during teleconference with ERT WAM.

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Analysis	Deborah Killeen	11/6/07	Tommy Martini	11/6/07	8:10	All/Analysis	Tommy Martini	11/8/07	NABhatt	11/8/07	8:00
All/Storages	NABhatt	11/15/07	Tommy Martini	11/15/07	9:30						

EP-C-04-032

CHAIN OF CUSTODY RECORD

No: 292-11/06/07-0004

Site #: 292

Contact Name: Deborah Killeen

Contact Phone: 732-321-4245

Lab: REAC

Lab Phone: 732-321-4252

0292-DAR-11260707

Lab #	Sample #	Location	Matrix	Collected	Numb Cont	Container	Preservative	Analyses	MS/MSD
15414	42657	17-T	Dust	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N
15415	42658	19-T	Dust	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N
15416	42659	16-T	Dust	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N
15417	42660	21-T	Dust	11/1/2007	1	8 oz cwm	None	Lead (Pb)	Y
15418	42661	7-T	Dust	11/1/2007	1	8 oz cwm	None	Lead (Pb)	N

026

Special Instructions: Use sample 21-T for the MS/MSD

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY # QC 80. 11/6/07

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
all Analyses	Deborah Killeen	11/6/07	[illegible]	11/6/07	8:10	All Analysis	[illegible]	11/6/07	A.H. Bhatt	11/6/07	8:30

REAC, Edison, NJ
(732) 321-4200
EPA CONTRACT -C-04-032

CHAIN OF CUSTODY RECORD

Project Name: Tidewa[illegible]
Project Number: EAC029
LM Contact: Vinod Kansal Phone: 732-321-4252
Deborah Killeen (Task Leader) 732-321-4245

No: 40591
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

0292-DAR-110707

027

Sample Identification | **Analyses Requested**

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCBs				
15417	42660	21-T	S	11/1/07	1	8oz Jar / None	✓				
15467	1923 *	N/A	↓	↓	↓	↓ ↓	✓				

** JM 11/14/07 JM 11/14/07

Matrix:

A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:

* Sample is a composite of samples 15419 and 15423 on COC# 292-110207-0003. 15g of each sample was homogenized to make a 30g composite sample.

** Reac #'s are not chronological

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

15417 → COC# 292-110607-0004
COC# 292-110207-0003

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All/Analysis	[signature]	11/14/07	[signature]	11/14/07	16:00						